

## Semantic Experts to Support Advanced Information Management Technologies

### 1. General methodology

- Baud, RH; Lovis, C; Rassinoux, AM; Scherrer, JR. 1998. Alternative ways of knowledge collection, indexing and robust language retrieval. *Methods of Information in Medicine* 37(4-5):315-26.
- Hahn, Udo. 1989. Making understanders out of parsers: Semantically driven parsing as a key concept for realistic text understanding applications. *International Journal of Intelligent Systems* 4(3):345-93.
- Lytinens, Steven L. [1991.] Semantics-first natural language processing [get the complete reference: ??AAAI] [have]
- Riesbeck, Christopher K. 1981. Perspectives on parsing issues. *Proceedings of the Nineteenth Annual Meeting of the Association for Computational Linguistics*, 105-6.
- Schank, Roger C. 1975. *Conceptual information processing*. Amsterdam: North-Holland Publishing Co.
- Schank, Roger C. 1982. *Dynamic memory*. Cambridge University Press.
- Schank, Roger C., and Robert Abelson. 1977. *Scripts, goals, and understanding*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Schank, Roger C.; Michael Lebowitz; and Lawrence Birnbaum. 1980. An integrated understander. *American Journal of Computational Linguistics* 6:13-30.
- Wilks, Yorick A. 1972. *Grammar, meaning and the machine analysis of language*. London: Routledge & Kegan Paul Ltd.
- Wilks, Yorick A. 1976. Parsing English II. In Eugene Charniak and Yorick Wilks (eds.) *Computational semantics: An introduction to artificial intelligence and natural language comprehension*. Amsterdam: North-Holland Publishing Co.

### 2. Semantic interpretation

#### 2.1 References for semantic interpretation

- Alshawi, Hiyan (ed.) 1992. *The core language engine*. Cambridge, MA: The MIT Press.
- van Bakel, Bas, and Reiner T. Boon. 1998. Principle-based structured concept generation - A contribution to knowledge-based document indexing. In P. A. Coppen, et al. (eds.) *Computational linguistics in the Netherlands 1997*, 171-86. Amsterdam: Rudopi.
- van Bakel, Bas. 1998. Condorcet Annual Report.
- van Bakel, Bas. 2000. Condorcet Final Report
- van Bakel, Jan. 1984. *Automatic semantic interpretation: A computer model of understanding natural language*. Dordrecht: Foris Publications.
- Bonnema, Remko; Rens Bod; and Remko Scha. 1997. A DOP model for semantic interpretation. *Proceedings of the 35th Annual Meeting of the Association for Computational Linguistics*, 159-67.

- Bos, Johan; Björn Gambäck; Christian Lieske; Yoshiki Mori; Manfred Pinkal; and Karsten Worm. 1996. Compositional semantics in VERB-MOBIL. *Proceedings of the 16th International Conference on Computational Linguistics (COLING)*, 131-6.
- Charniak, Eugene, and Robert Goldman. 1988. A logic for semantic interpretation. *Proceedings of the 26th Annual Meeting of Association for Computational Linguistics*, 87-94.
- Charniak, Eugene, and Yorick Wilks. 1976. *Computational semantics*. Amsterdam: North-Holland Publishing Company.
- Dörre, Jochen. 1997. Efficient construction of underspecified semantics under massive ambiguity. *Proceedings of the 35th Annual Meeting of the Association for Computational Linguistics*, 386-93.
- Gardent, Claire, and Michael Kohlhase. 1996. Higher-order coloured unification and natural language semantics. *Proceedings of the 34th Annual Meeting of the Association for Computational Linguistics*, 1-9.
- Hahn, Udo. 1989. Making understanders out of parsers: semantically driven parsing as a key concept for realistic text understanding applications. *International Journal of Intelligent Systems*, 4(3):345-85.
- Jackendoff, Ray. 1997. The architecture of the language faculty. Cambridge, MA: The MIT Press.
- Jacobs, Paul S., and Lisa F. Rau. 1990. SCISOR: Extracting information from on-line news. *Communications of the ACM* 33(11):88-97.
- Mauldin, Michael. 1991. *Conceptual information retrieval. A case study in adaptive partial parsing*. Boston: Kluwer Academic Publishers.
- Moore, Robert C. 1989. Unification-based semantic interpretation. *Proceedings of the 27th Annual Meeting of the Association for Computational Linguistics*, 33-41.
- Oltmans, Erik. 1999. *A knowledge-based approach to robust parsing*. Enschede, The Netherlands: Centre for Telematics and Information Technology.
- Palmer, Martha. 1981. A case for rule-driven semantic processing. *Proceedings of the Nineteenth Annual Meeting of the Association for Computational Linguistics*, 125-31.
- Romacker, Martin, and Udo Hahn. 2000. An empirical assessment of semantic interpretation. *Proceedings of the 1st Meeting of the North American Chapter of the Association for Computational linguistics*, 327-34.
- Romacker, Martin; Katja Markert; and Udo Hahn. 1999. Lean semantic interpretation. *Proceedings of the 16th International Joint Conference on Artificial Intelligence (IJCAI)*, 868-75.
- Rosé, Carolyn P. 2000. A framework for robust semantic interpretation. *Proceedings of the 1st Meeting of the North American Chapter of the Association for Computational linguistics*, 311-18. [also see works cited]

### **3. Aspects of semantic expertise**

#### *3.1 References for argument identification*

- Alshawi, Hiyan, and David Carter. 1992. Sortal restrictions. In H. Alshawi (ed.) *The core language engine*, Ch. 9, pp. 173-85.

- Wechsler, Stephen. 1995. The semantic basis of argument structure. Stanford, CA: CSLI Publications.
- Wilks, Yorick. 1975. An intelligent analyzer and understander of English. *Communications of the ACM* 18:264-74.
- Wilks, Yorick. 1977. Good and bad arguments about semantic primitives. *Communication and Cognition* 10:181-221.

### 3.2 References for document structure

- Baxendale, P. B. 1958. Man-made index for technical literature - an experiment. *IBM Journal of Research and Development* 2(4):354-61.
- Braddock, Richard. 1974. The frequency and placement of topic sentences in expository prose. *Research in the Teaching of English*, vol. 8, 287-302.
- Edmundson, H. P. 1969. New methods in automatic abstracting. *Journal of the ACM* 16(2):264-85.
- Fukumoto, Fumiyo; Yshimo Suzuki; and Jun'ichi Fukumoto. 1997. An automatic extraction of key paragraphs based on context dependency. *Proceedings of the Fifth Conference on Applied Natural Language Processing*, 291-8. Association for Computational Linguistics.
- Grosz, Barbara J., and Candace Sidner. 1986. Attention, intention, and the structure of discourse. *Computational Linguistics* 12(3):175-204.
- Hahn, Udo. 1990. Topic parsing: Accounting for text macro structures in full-text analysis. *Information Processing and Management* 26(1):135-70. [have]
- Hahn, Udo, and Martin Romacker. 1997. Text structures in medical text processing: Empirical evidence and a text understanding prototype. *Proceedings of the AMIA Annual Fall Symposium*, 819-23. [have]
- Hearst, Marti A. 1997. Texttiling: Segmenting text into multi-paragraph subtopic passages. *Computational Linguistics* 23(1):33-64.
- Hearst, Marti A., and Christian Plaunt. 1993. Subtopic structuring for full-length document access. *Proceedings of the Sixteenth Annual International ACM SIGIR Conference on Research and Development in Information Retrieval*, 59-68.
- Kintsch, W., and T. A. van Dijk. 1978. Toward a model of text comprehension and production. *Psychological Review* 85:363-94.
- Liddy, Elizabeth. 1991. The discourse level structure of empirical abstracts - an exploratory study. *Information Processing and Management* 27(1):55-81.
- Lin, Chin-Yew. 1995. Knowledge-based automatic topic identification. *Proceedings of the 33rd Annual Meeting of the Association for Computational Linguistics*, 308-10.
- Lin, Chin-Yew, and Eduard Hovy. 1997. Identifying topics by position. *Proceedings of the Fifth Conference on Applied Natural Language Processing*, 283-90. Association for Computational Linguistics.
- Luhn, H. P. 1958. The automatic creation of literature abstracts. *IBM Journal of Research and Development* 2(2), 159-65.

- Marcu, Daniel. 1997. From discourse structures to text summaries. *Proceedings of ACL/EACL Workshop on Intelligent Scalable Text Summarization*, 82-8.
- Moens, Marie-Francine, and Caroline Uyttendaele. 1997. Automatic text structuring and categorization as a first step in summarizing legal cases. *Information Processing & Management* 33(6):727-37.
- Paice, Chris D. 1990. Constructing literature abstracts by computer: Techniques and prospects. *Information Processing and Management* 26(1):171-86.
- Paice, Chris D. and Paul A. Jones. 1993. The identification of important concepts in highly structured technical papers. *Proceedings of SIGIR*, 69-78.
- Saggion, Horacio, and Guy Lapalme. 2000. Concept identification and presentation in the context of technical text summarization. *Proceedings of the ANLP/NAACL Workshop on Automatic Summarization*, 1-10.
- Salton, Gerard, and Chris Buckley. 1993. Approaches to passage retrieval in full text information systems. *Proceedings of SIGIR*, 49-58.
- Sjostrom, Colleen L., and Victoria Chou Hare. 1984. Teaching high school students to identify main ideas in expository text. *Journal of Educational Research* 78(2):114-18.
- Wilkinson, R. 1994. Effective retrieval of structured documents. *Proceedings of SIGIR*, 311-17.
- Zadrozny, Wlodek, and Karen Jensen. 1991. Semantics of paragraphs. *Computational Linguistics* 17(2):171-209.
- Zobel, J.; A. Moffat; R. Wilkinson; and R. Sacks-Davis. 1995. Efficient retrieval of partial documents. *Information Processing and Management* 31(3):361-77.

### 3.3 References for semantic domain experts

- Dunham, George. 1986. The role of syntax in the sublanguage of medical diagnostic statements. In R. Grishman and R. Kittredge (eds.) *Analyzing language in restricted domains: Sublanguage description and processing*, 175-94.
- Liddy, Elizabeth D.; Corinne L. Jorgensen; Ernest E. Sibert; and Edmund S. Yu. 1993. A sublanguage approach to natural language processing for an expert system. *Information Processing & Management* 29(5):633-645.

### 3.4 References for interaction of domain ontology and linguistics

- Allen, James. 1993. Natural language, knowledge representation and logical form. In M. Bates and R. Weischedel (eds.) *Challenges in natural language processing*. Cambridge University Press.
- Hirakawa, Hideki; Zhonghui Xu; and Kenneth Haase. 1996. Inherited feature-based similarity measure based on large semantic hierarchy and large text corpus. *Proceedings of the 16th International Conference on Computational Linguistics (COLING)*, 508-13.
- Iwanska, Lucja M., and Stuart C. Shapiro (eds.) 2000 Natural language processing and knowledge representation. Cambridge, MA: The MIT Press.
- Markert, Katja, and Udo Hahn. 1997. On the interaction of metonymies and anaphora. *Proceedings of the 15th International Joint Conference on Artificial Intelligence (IJCAI)*, 1010-15.

Simmons, R. F. 1973. Semantic networks: Their computation and use for understanding English sentences. In Schank and Colby (eds.) *Computer models of thought and language*. San Francisco: W.H. Freeman and Co.

#### **4. Aspects of domain expertise / domain knowledge**

##### *4.1 References for domain expertise, domain knowledge, and knowledge representation.*

- Campbell, Keith E.; Diane E. Oliver; Kent A. Spackman; and Edward H. Shortliffe. 1998. Representing thoughts, words, and things in the UMLS. *Journal of the American Medical Informatics Association* 5(5):421-31.
- Schulz, Stefan, and Udo Hahn. 2000. Knowledge engineering by large-scale knowledge reuse: Experience from the medical domain. *Proceedings of the 7th International Conference on Principles of Knowledge Representation and Reasoning*.
- Sowa, John F. 2000. *Knowledge representation: Logical, philosophical, and computational foundations*. Pacific Grove, CA: Brooks/Cole.

## **5. Areas of overlap**

## **6. General machinery and specific rules**

### *6.1 Document structure*

6.1.1 General machinery

6.1.2 Specific rules

### *6.2 Predicate processing; correspondence rules*

### *6.3 Potential arguments*

6.3.1 General rules

6.3.2 Specific rules

## **7. General linguistic procedures**

### *7.1 Before potential argument identification*

7.1.1 Primary Tokenization and sentence boundary identification

7.1.2 Secondary tokenization: expand local acronyms

7.1.3 Lexical look-up

7.1.4 Category label ambiguity resolution (stochastic tagger)

7.1.5 Underspecified syntactic parse

7.1.6 Map noun phrases to the domain model (MetaMap)

### *7.2 After potential argument identification*

7.2.1 Coordination

7.2.2 Predicate identification

7.2.3 Argument identification

7.2.4 Relativization

7.2.5 Anaphora resolution